



**ANNOUNCEMENTS**

Normal to below normal rainfall likely for the next three months in the Lesser Antilles and Guyana. Normal to above normal elsewhere. All this dependent on the persistence and strength of the El Niño developing in the Pacific. **Temperatures are likely to continue to be above normal by up to 0.5 °C for at least until the end of 2012.** The formation of National Tri-partite committees to sustain the activity and output of CAMI has begun. **Farmers' forums continue in CAMI states.**

**REGIONAL OVERVIEW ON WEATHER AND CLIMATE FOR SEPTEMBER 2012**

Apart from St. Lucia that was normal, the CAMI islands of the eastern Caribbean had below normal rainfall for September. Trinidad, Tobago, Grenada and St. Vincent were moderately dry; Barbados abnormally dry; Dominica exceptionally dry; and Antigua and Anguilla severely dry. Conditions in Guyana ranged from normal in the north to moderately dry in the east. Rainfall in Jamaica ranged from moderately dry in the west to moderately wet in the east; while in Belize it ranged from severely dry in the west exceptionally dry in the east.

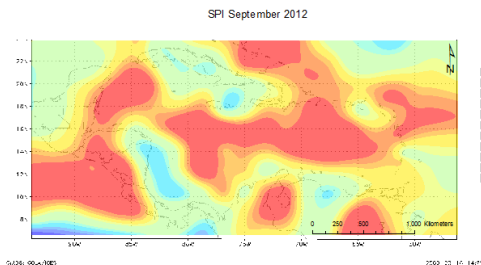


Figure 1. SPI for the Caribbean for September 2012. More information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>.

Most annual cropping takes place over a period of about three months or just over. Apart from Barbados that was abnormally wet, the eastern

Caribbean and Guyana were normal to below normal for the three month period. Trinidad and Grenada were moderately dry; Tobago and Dominica abnormally dry; St. Vincent extremely dry; Antigua severely dry; St. Lucias and Guyana normal. Conditions in Jamaica ranged from moderately dry in the west to moderately wet in the east; while those in Belize were extremely dry in the west and exceptionally dry in the east. See Figure 2.

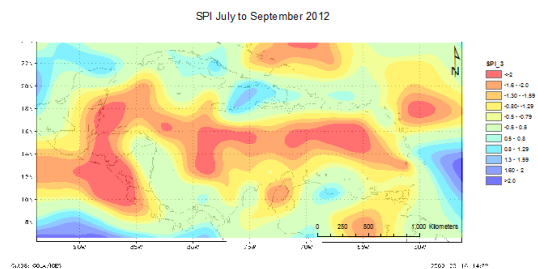


Figure 2. SPI for the Caribbean for July to September 2012 more information on the SPI can be viewed at <http://63.175.159.26/~cdpmn/spimonitor.html>

**NATIONAL OVERVIEWS**

**Antigua**

Antigua experienced well below normal rainfall during September. The average total for the month was 30.2 mm; this was only 21% of the normal total (1981 – 2010). Further, this total was the lowest since 1978 and the second lowest on record (1928 – 2012). At the airport, the 6 rainy days ( $\geq 1$  mm)

were also well below normal and the second lowest on record (1971 – 2012), with 1978 being the lowest. Further, there was one heavy rainfall day ( $\geq 10$  mm), which accounted for 53% of the total. The mean temperature of  $28.2^{\circ}\text{C}$  was near normal; however, on September 4, the maximum temperature reached  $34.3^{\circ}\text{C}$ , the second highest on record. Further, the mean daily maximum and minimum temperatures were well above and above normal respectively. The outlooks call for near normal rainfall and temperature for October and the period October to December. The meteorological drought, which started in February, has gotten to serious levels with the rainfall deficit near 29% as of September 30. The dry weather has caused agricultural production to be very low as many farmers have been forced to scale back.

### Barbados

Only two tropical cyclones, Michael and Nadine, developed in the Atlantic Basin during the month but these steered clear of the Lesser Antilles as they tracked over the northern Atlantic. While, there were no direct impacts from these systems on the eastern Caribbean, they contributed to the very slack pressure gradient over the island chain, thus, light winds, extremely warm days and nights and below normal rainfall levels sum up the weather experienced across Barbados and the eastern Caribbean during the month of September.

Following an eight-day dry spell, the only rain event during the first half of the month occurred on 9<sup>th</sup> September; resulting in 7.7mm of rainfall at Grantley Adams' International Airport.

Another two weeks of virtually dry weather was broken between 22<sup>nd</sup> and 23<sup>rd</sup>, when a tropical wave in combination with an upper-level trough and the I.T.C.Z produced 75mm of rainfall at the Airport. Cliff Plantation in St. John reported 62.5mm and Prior Park in St. James 36mm during the same period. Two other significant rain events occurred on 27<sup>th</sup> and 30<sup>th</sup> producing 6.7mm and 14.5mm respectively. The final September total at the Airport reached 107.7mm with a total of six rain days (rainfall  $\geq 1$ mm). This total was 32 % short of the long-term mean while the number of rain days was eight less than the normal based on the 1981 to 2010 mean.

Although there were widespread complaints about the heat, the average maximum temperature of  $30.7^{\circ}\text{C}$  was actually  $0.3^{\circ}\text{C}$  lower than the long-term average. Nevertheless, the highest maximum reached was  $32^{\circ}\text{C}$  on the 23<sup>rd</sup> and the lowest minimum was  $22.1^{\circ}\text{C}$  on the 24<sup>th</sup>.

### Belize

Atmospheric moisture content was high over Belize from 7<sup>th</sup> to the 10<sup>th</sup> September. Punta Gorda recorded 100mm of rainfall on 9<sup>th</sup>. The weather afterwards was mostly sunny until 13<sup>th</sup> when a few early morning showers occurred over central Belize. Barton Creek and Chaa Creek in western Belize registered the highest rainfall with 43mm and 25mm respectively. The remainder of the day turned out quite sunny. A slack pressure gradient, which prevailed to the weekend, meant rather high daytime temperatures for much of the country.

On 18<sup>th</sup> many network stations recorded their highest maximum temperatures. These included Tower Hill ( $35.5^{\circ}\text{C}$ ), Philip Goldson International Airport ( $32.6^{\circ}\text{C}$ ), Belmopan ( $36.0^{\circ}\text{C}$ ), Central Farm ( $29.4^{\circ}\text{C}$ ) and Melinda ( $33.6^{\circ}\text{C}$ ).

During the following days, a consistent pattern of late night showers developed over southern coastal Belize before spreading north to the other coastal portions of the country. However, most afternoon showers and thunderstorms occurred north and northwest of the Belize border. A tropical wave located east of Belize on 21st crossed late in the night, with some showers across much of the country on the 22<sup>nd</sup>. Pomona in the south recorded 74mm, while Barton Creek in western Belize measured 58mm. Fog occurred at the International Airport for two consecutive days, while rainfall occurred over northern and western Belize. Rio Bravo in the northwest measured 40mm, while the International Airport recorded 28mm.

Showers continued to occur along coastal and central portions of the country through 25<sup>th</sup>, with rainfall ranging as high as 23mm at Pomona to nil for western locations such as Barton Creek and Central Farm. A pattern of evening showers and thunderstorms occurred for two consecutive nights (26<sup>th</sup> and 27<sup>th</sup>) over southern, central and northern

Belize. During the morning of 27<sup>th</sup> a large area of rain clouds existed for the greater part of the day over central, coastal and northern Belize. However, on the 28<sup>th</sup> morning, skies cleared up after another encounter with early morning fog blanketing the International Airport and surrounding areas. The weekend to the end of September turned out very sunny and quite dry for virtually the entire country.

Table 1 Rainfall and Temperature Summary for September 2012 for stations in Belize

Station	Liber-tad	Zoo	PGIA	Belmo-pan	Central Farm	Savannah
Elevation (m)	12	30	5	90	90	13
<b>Rainfall (mm)</b>	<b>42</b>	<b>8.9</b>	<b>104</b>	<b>79</b>	<b>69</b>	<b>94</b>
Mean.	194	200	268	250	170	367
Max	22	4	28	16	19	18
Rain days	6	3	14	9	7	13
<b>Temp (°C)</b>						
Mean	<b>23.3</b>	<b>22.7</b>	<b>25.0</b>	<b>22.9</b>	<b>22.6</b>	<b>24.2</b>
Min.						
Mean	22.7	22.5	24.3	22.5	22.5	23.9
Lowest	20.6	21.4	23.0	21.1	20.0	22.5
Min.						
Mean	<b>33.7</b>	<b>33.6</b>	<b>31.6</b>	<b>32.6</b>	<b>33.6</b>	<b>32.8</b>
Max.						
Mean	33.1		31.4	32.1	32.2	31.2
Highest	36.0	35	32.6	35.3	36.0	39.2
Max.						

**Dominica**

This September, a record low rainfall amount was measured at both the Canefield and Melville Hall Airports. On average it is the wettest month at Canefield and thus far it is the driest for 2012.

31.9mm of rainfall was recorded at Canefield on the south-west coast and represents approximately 13% of the monthly mean. The highest daily total was 18.5mm recorded on the 26<sup>th</sup> as a low-level trough affected our area. There were 24 dry days with a maximum dry spell length of 10 days from the 1<sup>st</sup> to the 10<sup>th</sup>. On average there are 13 dry days at Canefield. The averaged air temperature was 29.4°C which is 0.7° greater than the monthly mean. The maximum temperature was 34.3°C recorded on the 3<sup>rd</sup> while the minimum temperature was 22.0°C recorded on the 14<sup>th</sup>. Maximum wind gust was 35km/h which was recorded on the 10<sup>th</sup> and 22<sup>nd</sup>.

At the Melville Hall on the north-east coast, 94.3mm of rainfall was recorded which is approximately 30% of the monthly mean. The highest daily total was

41.1mm recorded on the 17<sup>th</sup> as a result of a tropical wave affecting the area. 20 dry days were recorded throughout the month which is twice the average amount. A maximum dry spell length of 8 days occurred during the first dekad. The averaged air temperature was 28.9°C which is 0.3° above the mean. As at Canefield, the maximum temperature was 34.3°C, but recorded on the 2<sup>nd</sup>. This was also a record high for September at Melville Hall. The minimum temperature was 22.1°C recorded on the 14<sup>th</sup>. Maximum wind gust was 48km/h which was recorded on the 24<sup>th</sup>.

Not much planting took place on farms around the island this month due to the dry conditions. Those who did faced losses as either germination did not occur or young plants wilted in areas with poor irrigation practices. The fight against *black sigatoka*, red palm mite, Giant African snails and citrus greening continues.

**Grenada**

During this month, many voices across the tri-island state echoed complaints of the overwhelming effects of the perceived escalation in atmospheric temperature. Climatological analysis has confirmed that the maximum temperature recorded during this month compared with last year increased by 0.3°C. This analysis has also shown that the highest maximum temperature during September from the period 1986-2012 was 33.8°C registered in 2005. Figure 3 represents the September temperatures.

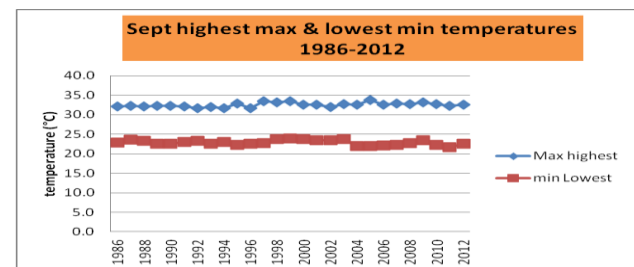


Figure 3 Temperatures at Maurice Bishop Airport from 1986 to 2012

The average maximum and minimum temperatures for this month were 31.5°C and 25.1°C respectively. The highest temperature read was 32.6 °C and was recorded on 2days this month; 19<sup>th</sup> and 22<sup>nd</sup>. The lowest temperature was 22.6°C and was recorded on the 24<sup>th</sup>.

The twelve rain days of this month yielded some 79.4mm of rainfall. This amount equates to 41% below September’s mean of 135.0mm. The 23<sup>rd</sup> was the only day that more than 25 mm of rain was measured. A tropical wave coupled with a trough induced heavy rainfall and thunderstorm activity. There were five thunderstorm days this month namely: 17<sup>th</sup>, 20<sup>th</sup>, 23<sup>rd</sup>, 24<sup>th</sup> and 30<sup>th</sup>. This number is also equivalent to the monthly average.

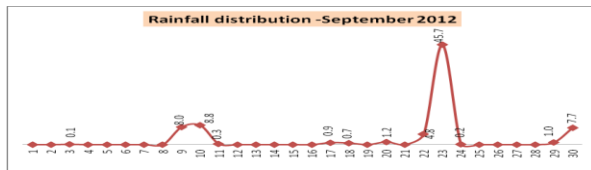


Figure 4 Daily rainfall at Maurice bishop Airport

**Guyana**

Guyana had an average of 47.6 mm of rainfall with an average of 5 rainfall days. Climatological normal for September indicated an expected average of 131.3mm with 10 rainfall days. Rainfall values recorded for September implied that Guyana was below its normal climatological average. Bosia Minerals in Region 10 (Upper Demerara Upper Berbice) recorded the highest monthly rainfall with 216.1mm. The highest one day rainfall total was also recorded at Bosia Minerals with a total of 69.4mm on the 11<sup>th</sup>. A total of forty two (42) rainfall stations across Guyana recorded rainfall values below their climatological normal, while two (2) stations recorded above their rainfall normal. Regional Classification of the rainfall data for September indicated that Region 10 recorded the highest monthly average with 149.6mm.

September was warmer than normal, with average Maximum temperature for the Month being 33.4°C when compared to the climatological Maximum expected of 31.5°C. Lethem (Region9) recorded the highest average monthly Maximum temperature of 35.0°C; also Lethem also on the 14<sup>th</sup> reported the highest one day maximum temperature with 36.5°C which implied that dry weather conditions was experienced over Guyana in September.

**Jamaica**

During the latter parts of the month, the island experienced a significant increase in rainfall activities

especially over eastern parishes. As a consequence, one major rainfall event was reported during the month (September 29-30), which resulted in flash flooding over some eastern and central parishes. **Surface Troughs** were the most significant weather feature that affected the island.

During the month, Sangster in the northwest recorded 67.9 mm of rainfall, while Norman Manley in the southeast recorded 231.3 mm. There were six rainfall days reported for both Sangster and Norman Manley International airports. Sangster recorded below average rainfall or approximately 47% of the 1971-2000 while Norman Manley recorded 131% of the 1971-2000 mean.

The highest maximum temperature recorded for Sangster Airport was 34.7°C (2<sup>nd</sup> September) which exceeded the 20-year average by 0.4°C. At Norman Manley Airport the highest maximum was 34.5 °C recorded on the 26<sup>th</sup> September and this equalled the 20- year average for that station.

**Table.2 Climatological Statistics for Manley and Sangster Airports for September 2012**

Monthly Averages	Norman Manley	Sangster
Extreme Maximum Temperature	34.5 °C <b>(34.5°C)</b>	34.7 °C <b>( 34.3°C)</b>
Lowest Minimum Temperature	22.7 °C <b>(23.4°C)</b>	22.5 °C <b>(22.0°C)</b>
Rainfall Total	231.3 mm	67.9 mm
Rainfall days (≥1mm)	6 days <b>(8.9)</b>	6 days <b>(16.3)</b>

Values in red indicate the 1992-2010(19-year) averages.

**St Lucia**

September was a month of very little rainfall for many parts of Saint Lucia. George F.L. Charles Met Office for example recorded only 70.9 mm which is its second lowest total since 1967 and which represents a mere 32% of its mean. There were only 8 rainy days of which one (1) produced rainfall in excess of 20 mm. At Hewanorra, rainfall was higher (137.6 mm) but was also less than the mean (184.3 mm). There were only 12 rainfall days with 2 days producing more than 20 mm (on the 16<sup>th</sup> and 23<sup>rd</sup> with 27.7 mm and 76.1 mm respectively).

Like September, October is one of the wettest and most humid months of the year. Monthly rainfall



figures range from 31.2 to 710.9 mm at Vieux-Fort and from 65.8 mm to 681.5 mm at George Charles. Most of the rains results from tropical weather systems (waves and cyclones) and showers are sometimes very heavy. At Hewanorra, the mean maximum temperature is 31.1 °C and range from 30.0 °C to 32.4 °C while the mean minimum temperature is 25.0°C and range from 24.0 °C to 27.1 °C.

Farmers should continue to employ best agricultural practice on their farms including proper drainage in their fields to avoid problems associated with excess soil moisture and high humidity.

The seasonal precipitation outlook for the October, November and December period indicate the likelihood for rainfall to be near normal or to range from about 413 mm to 508 mm in Vieux-Fort and from 560 mm to 639 mm in Castries.

Saint Lucia’s issue of its first national agromet bulletin has experienced some delays.

Table 3 September monthly averages at Hewanorra

AVERAGE MONTHLY DATA FOR HEWANORRA					
Cloud Cover (oktas)	Wind Dir (o from N)	Wind Speed (kt)	Air Temp. (°C)	RH (%)	Rainfall (mm)
4	90	09	28.3	78	137.6
Temp (oC)	Min Temp (°C)	Daily Sunshine (Hrs)	Daily Evap (mm)	Soil 20 (°C)	
31.4	25.2	9.1	7.4	29.6	

**St Vincent and the Grenadines**

Total rainfall recorded for September 2012, at E.T. Joshua Airport-Arnos Vale was 141.2 mm. This was about 58% of the average for September (243.9mm). There were 12 rain-days, the highest being 39.8mm on the 23rd (~28% of the total). There were 18 dry-days, as unusually dry air over the Atlantic and island chain resulted in hot dry days and warm nights. There was a six-day dry spell from the 11th to 16th. Then, on the night of the 18th; lightning, heavy thunder and rain interrupted that hot period. Again from the evening of the 22nd to 24th another heavy rainfall event resulted in a few landslips, proving that uneven distribution of rainfall can be more damaging than the actual total. Most of the rain (89%) was recorded within the eight day period 17th to 24th.

The distribution showed the first dekad (ten day period) had 5%, the second dekad had 28%, and the third dekad had 67% of the rainfall

The average maximum temperature was 31.7°C, and the average minimum temperature 25.5°C. Extreme maximum temperature recorded for September was 0.9°C higher than the average, while extreme minimum temperature was 0.2°C lower than the 30-year average. The mean relative humidity of 71.5% was 6.4% below the average of 77.9%. (The period 1981-2010 was used to calculate averages).

Extremes for June, 2012 (date of occurrences): Barometric Pressure – highest 1018.5 mb (3rd), lowest 1011.0 mb (12th); Air Temperature – highest 33.2°C (14th), lowest 22.8 °C (23rd); Relative Humidity – highest 92% (18th,19th, 20th, 23rd), lowest 51% (9th).

**Trinidad and Tobago**

In September 2012, rainfall recorded at the Observing station in Piarco International Airport, Trinidad was 77.7 mm. There were no dry spell for the month of September.

Although rainfall recorded at the observing station in Piarco International Airport was below normal reports reaching the office indicated most thundershower activities and accompanying strong wind occurred in western parts of Trinidad.

No reports of damages to the Agricultural community were received ,

**REGIONAL OVERVIEW ON SEASONAL CLIMATE FORECAST**

Rainfall in the Caribbean during October to December will likely become generally consistent with typical El Niño conditions. This means an increased likelihood of normal to above normal rainfall over the Bahamas and (possibly) some portions of the Greater Antilles whereas normal to below normal rainfall may occur in most parts of the Antilles and, especially, the Guianas. The largest uncertainties at this point are the

persistence and strength of the El Niño conditions, which now are border-line ENSO/neutral to weak El Niño, and how far atmospheric conditions will become consistent with typical El Niño conditions. All other things left unchanged, slightly above normal North Atlantic and Caribbean SSTs currently somewhat increase chances of above normal rainfall over the Antilles. Therefore, the counteracting El Niño will either dominate (below normal rainfall) or not (normal rainfall). If near-neutral conditions continue, there is also the likelihood of a Caribbean influence from mid-latitude frontal lows, which can also pull ITCZ moisture into the southern Caribbean islands and increasing the chances of rainfall.

As in any six month forecast, there is considerable uncertainty as to the development of rainfall activity in the region, although forecasting confidence is improving as the Caribbean is approaching the late rainfall season. With weak El Niño conditions in the Pacific and slightly below average to average SSTs over the equatorial Atlantic, but slightly above SSTs being forecasted in the Caribbean and North Atlantic, it is likely that rainfall in the south-eastern half of the Caribbean will generally be below normal. Much of the forecasted trend will depend, however, on how much the tropical atmospheric circulation takes on a typical pattern associated with El Niño, which thus far has not been the case over much of the Pacific and Atlantic. Furthermore, though models predict a weak to borderline moderate El Niño by the end of the year, some predict its disappearance early in the next year. Consequently, there is only some confidence that the start of the dry season (December/January) should remain dryer than average.

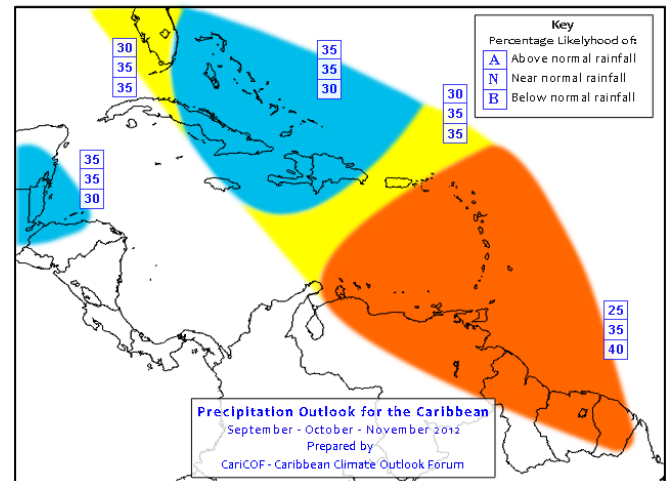


Figure 5 The September to November 2012 Rainfall Forecast

Currently, Caribbean SSTs hover around average, especially in the north. Depending on how much El Niño affects rainfall, air temperatures could be either slightly above normal over the Antilles if weak, or significantly above normal if moderate as dryer conditions settle. Similarly, warmer than average air temperatures are also expected over the Guianas in congruence with below normal rainfall.

#### ENSO Conditions:

Conditions are currently border-line ENSO/neutral and weak El Niño. Weak El Niño conditions are still being forecasted for late rainy season into the 2013 dry season.

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